

12

# EUROPEAN PATENT APPLICATION

21 Application number: 85102198.0

51 Int. Cl.<sup>4</sup>: B 01 L 3/00  
 B 32 B 15/08

22 Date of filing: 27.02.85

43 Date of publication of application:  
 03.09.86 Bulletin 86/36

84 Designated Contracting States:  
 CH DE FR GB LI NL

71 Applicant: HORIBA, LTD.  
 2 Miyano Higashi-machi Kissyoin  
 Minami-ku Kyoto(JP)

72 Inventor: Kohno, Takeshi 1-638, Daigo Ishida Danchi  
 1 Banchi Ishida Nishinotsubo  
 Fushimi-ku Kyoto(JP)

72 Inventor: Uematsu, Hiroaki 3-303, Rakusei Shinbayashi  
 Danchi  
 5 Banchi 4-chome Ooe Nishi Shinbayashicho  
 Nishikyo-ku Kyoto(JP)

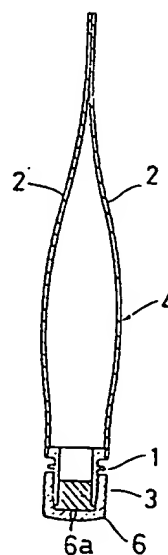
72 Inventor: Usui, Seiji  
 9-45, 3-chome Kusatsu  
 Kusatsu-City Shiga-Prefecture(JP)

74 Representative: Patentanwälte TER MEER - MÜLLER -  
 STEINMEISTER  
 Mauerkircherstrasse 45  
 D-8000 München 80(DE)

54 Liquid preserving vessel for use in liquid sample analyzers.

57 A vessel for preserving liquids for use in analyzers for liquid samples is formed of a closed bag member (4) consisting of membrane members (2), of which a mouth portion (1) is tightly sealed with a rubber plug (3). The membranes have a remarkably small permeability to air and water vapour and great flexibility. Via an automatic device the penetration of air, water vapour and the like into the vessel from outside can be controlled when the volume of the liquid is reduced that is to say, when the calibrating solution contained in the vessel is consumed.

Fig. 3



tional polyethylene tanks and glass bottles, as above described, an air layer is expanding with the consumption of calibrating solution and the calcium ions are bonded to CO<sub>2</sub> contained in the air to form a sediment of calcium carbonate or evaporation takes place, and as a result, the calibrating solution is changed in composition and concentration, such that the correct calibration can not be achieved.

Thus, it is an object of the present invention to provide a vessel for preserving liquids for use in an analyzer of liquid samples which can control the intrusion of air thereinto from the outside as far as possible when the volume of the internal liquid is reduced (that is to say, the calibrating solution contained in the vessel is consumed) and further can prevent water vapour from evaporating and intruding.

A vessel for preserving of the liquid used in liquid sample analyzers according to the invention comprises the technical features as defined in claim 1. Advantageous embodiments of the invention are the subject of dependent claims.

An example of the invention is described in the following with reference to the drawings wherein

Fig. 1 is a sketch for illustrating the problems of the prior art;

Figs. 2 to 5 illustrate the preferred embodiments of a vessel for preserving liquids for use in analyzers for liquid samples according to the present invention, in which

Fig. 2 is a partially sectioned front view showing a

properties for air, water vapour and light at the same time.

In addition, a cap 6, which is provided with a small hole  
5 6a for letting pass a syringe therethrough at the center thereof, can be screwed in said mouth member 1.

The solution, which contains TRIS, that is to say tris(hydroxymethyl)aminomethane, as a buffering agent, is enclosed in a vessel for preserving liquids as a standard  
10 calibrating solution for calibrating of analyzers, in which for example calcium ions and pH are determined at the same time, so that said solution may be filled in said vessel in such a manner that residual air is not contained  
15 in said solution at all. The calibrating solution, which hardly shows an affinity to calcium ions, can be prepared by using TRIS as a buffering agent instead of those cases where BES and TES are used as buffering agents.

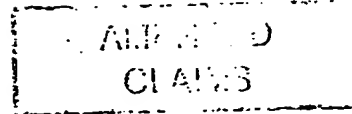
20 Said vessel, in which the calibrating solution is enclosed in the above described manner, is connected with an analyzer 7 to calibrate said analyzer 7, as shown in Fig. 5. Referring to Fig. 5, 8 (8) designate pipes for introducing a liquid to be tested, 9 designating a pipe for introducing the calibrating solution, 10 designating a switch  
25 valve, 11 designating a drawing pump, 12 designating a flow-through type ion electrode as a measuring member, and 13 designating a drain pipe. Said vessel for preserving liquids is fixed by inserting said hanging hole 5 over  
30 a hook 14 or the like and is connected with said pipe 9 for introducing the calibrating solution of said analyzer 7 by inserting a syringe 16 provided with a connecting tube 15 into said rubber plug 3 of said mouth member 1. If said switch valve 10 is switched over to the calibration.  
35 side under such a condition, the calibrating solution is transferred to said ion electrode 12 in a determined quan-

member 4 is made of materials having remarkably small permeability to air and water vapour, the intrusion of air from the outside as well as the evaporation and penetration of water vapour can be satisfactorily prevented, and therefore, the composition and concentration of the liquid contained in the vessel can be held constant for a long time. Therefore, a vessel according to the present invention can be very effectively used for a highly accurate determination of liquid quantities, for calibration purposes and the like.

85 102 198.0  
HORIBA, LTD.  
Case: HO-165

March 05, 1986  
Mü/vL

## C L A I M



A vessel for preserving liquids for use in analyzers for liquid samples formed of a closed bag member (4) consisting of membrane members (2), of which a mouth portion (1) is tightly sealed with a rubber plug (3), said membrane members (2) having very small permeability for air and water vapour and great flexibility,  
c h a r a c t e r i z e d i n t h a t  
said membrane member (2) is formed of a four-layer laminated membrane consisting of the outermost polyester layer (a), a vacuum deposited aluminum layer (b), a nylon layer (c) and a low-density polyethylene layer (d).

Fig. 4

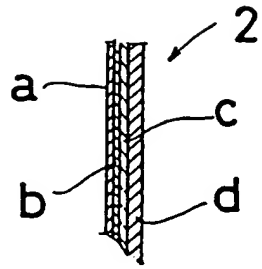
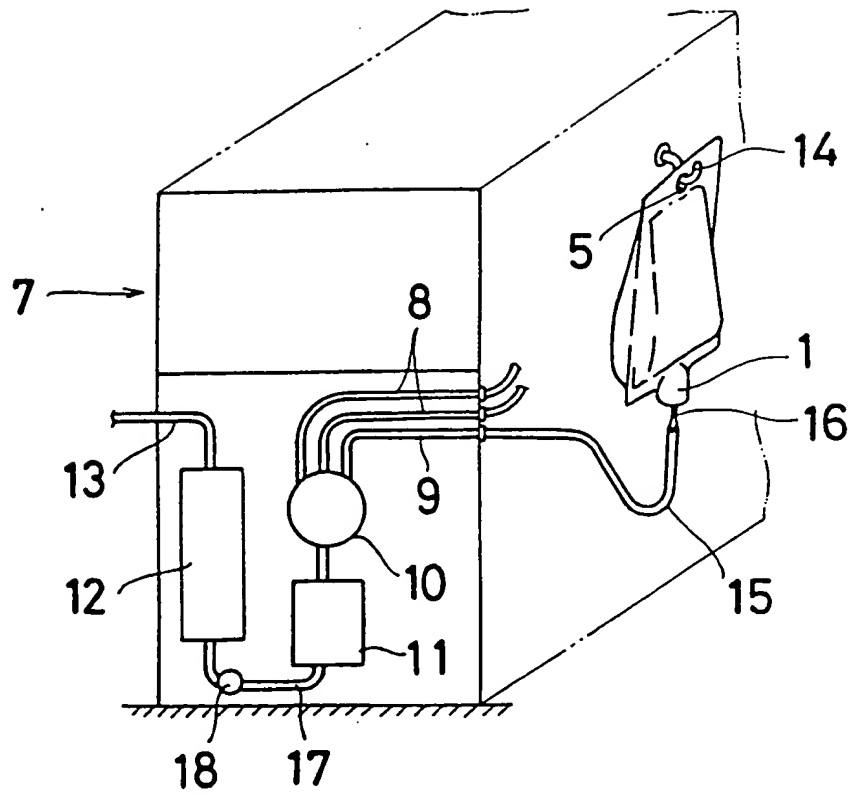


Fig. 5





DOCUMENTS CONSIDERED TO BE RELEVANT			Page 2
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	US-A-3 368 560 (T.H. GEWECKE) * Column 2, lines 35-37; figures 1,2 *  -----	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 28-10-1985	Examiner ANTHONY R.G.
<b>CATEGORY OF CITED DOCUMENTS</b>			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			